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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,250	08/26/2003	Akira Ueda	1614.1360	2448

21171 7590 08/23/2005

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EXAMINER	
BROOME, SAID A	

ART UNIT	PAPER NUMBER
2671	

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/647,250	UEDA ET AL.	
	Examiner	Art Unit	
	Said Broome	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date [redacted]
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arakawa (US Patent 5,398,307) in view of Tampieri (US Patent 6,366,283).

Arakawa teaches the limitations of claims 1 and 10-13 except for the reduction of cube elements by combining the cube elements. Arakawa illustrates forming grid lines over an object, in Figure 3, and forming cube data from mesh data by dividing the object by grid lines in Figure 2, which is disclosed in claims 1 and 11-13. Arakawa also teaches obtaining the cube data by determining whether the mesh elements form the desired object in column 1 lines 23-26 where it is explained that the mesh-divided space is determined based on the configuration or shape of the target object based on a condition, which is disclosed in claim 2. Arakawa also teaches what is disclosed in claim 3 in column 1 lines 29-37, where it is stated that the condition of the previous claim is the ratio of the volume of the object to the volume of the mesh element. Arakawa describes the division and forming of mesh data is dependent of the ratio of the volume of the object to the ratio of the volume of the mesh elements or cells, which are illustrated in Figure 2. As previously stated, Arakawa fails to teach the reduction of cube elements by combining cube elements. Tampieri illustrates combining cell elements in Figure 6, and describes this

combination in column 7 lines 19-29. Although Tampieri describes combining cell elements of a 2D surface, the method is done in a 3D environment and can therefore be used to reduce cube elements as well. Tampieri describes combining small elements of the mesh into larger elements under the condition that the combination of elements does not significantly affect the shape or quality of the mesh. Tampieri teaches the combining of elements only when the shape and image quality of the object is maintained as disclosed in claim 4, the preservation of the shape of the target object as disclosed in claim 5, the preservation of the volume illustrated in Figure 6 as disclosed in claims 6 and 7, and the combination of mesh elements containing an aspect ratio within a certain range as illustrated in Figure 6, as disclosed in claim 8. The aspect ratio of each combined cube element is described in column 7 lines 19-23, where it is apparent that the ratio of the surface of each combined element is held within the overall range of the object after the combination since the overall shape of the object remains constant and thus the ratio remains the same as well, which is also illustrated in Figure 6 from object 604 to 607. Later Tampieri teaches the limitation of claim 9, that each element has a rectangular parallelepiped shape, and that the aspect ratio of each surface of each combined element is a ratio of two orthogonal sides. The element 609 of Figure 6 is shown to have an aspect ratio of two surfaces, which are orthogonal to each other. Tampieri also illustrates in Figure 6 what is disclosed in claim 10, which describes the reduction of grid lines as the mesh elements are reduced. Therefore it would have been obvious to one of ordinary skill in the art to combine the formation of grid lines over an object that results in forming cube data from mesh data as taught by Arakawa with a reduction of mesh elements as taught by Tampieri, by combining mesh elements under a certain condition. Motivation for this combination is the improved accuracy of the analysis mesh by forming grid

lines over the object, and combining the smaller elements of the formed cube data into larger elements thereby sustaining the volume and shape of the object while reducing the amount of mesh data and computation time.

It is also evident that Arakawa describes the method of generating mesh data, which is disclosed in the preamble of claim 1, in column 1 lines 9-13. The computer-readable recording medium for storing an executable program, as well as an apparatus for generating mesh data, which are described in the preamble of claims 12 and 13 respectively, are both shown in Figure 1, and are summarized in column 4, lines 22-40.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 11 is rejected under 35 U.S.C. 101 because it contains non-statutory subject matter. This rejection may be overcome by deleting the beginning of claim 11, which reads " A program for causing a computer to execute", and direct the claim towards a method of generating mesh data or by reciting the program to be embodied in a computer readable media for causing the computer to execute.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Said Broome whose telephone number is (571) 272-2931. The examiner can normally be reached between 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is (571) 272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S.Broome SB
8/15/2005

ULKA J. CHAUHAN
PRIMARY EXAMINER